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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
BROWN, TIMOTHY M	

ART UNIT	PAPER NUMBER
1648	

DATE MAILED: 06/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/515,014	COLEMAN ET AL.	
	Examiner	Art Unit	
	Timothy M. Brown	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 October 2004 and 05 May 2005*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14 and 16-28* is/are pending in the application.

4a) Of the above claim(s) *13,14 and 16-28* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

D-22

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 23, 2005 has been entered.

This Non-Final Office action is responsive to the After Final Amendment submitted October 25, 2004, and the Supplemental Amendment After Final submitted May 23, 2005. Claims 1-14 and 16-28 are pending. Claims 1-12 are under examination, while claims 13, 14, and 16-28 are withdrawn from consideration.

Election/Restrictions

New claims 26-28 are directed to an invention that is independent or distinct from the originally claimed invention. This results because the invention of claims 26-28 is related to the originally claimed invention as combination/subcombination. The original invention is drawn to an immunoassay comprising the polypeptide of SEQ ID NO:3, while the invention of claims 26-28 is drawn to an immunoassay that uses a combination of polypeptides comprising the polypeptide SEQ ID NO:3, and two HIV envelope proteins. Thus, new claims 26-28 are independent as being drawn to a patentably distinct combination.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution

on the merits. Accordingly, claims 26-28 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

In the After Final Amendment, Applicants urge that claims 13 and 14 should be rejoined in light of the amendment to claims 1 and 12. The Examiner respectfully disagrees. Regarding claim 13, restriction in this case is proper because claim 13 requires polypeptides (i.e. SEQ ID NOS:5-11) that are chemically and conformationally distinct from the polypeptide of the original invention (i.e. SEQ ID NO:3). These differences provide each polypeptide with a unique immunological specificity and unique biological activity. Regarding claim 14, restriction in this case is proper as claim 14 is drawn to a produce while the original invention is drawn to a method. Claims 13 and 14 are therefore withdrawn as being directed to patentably distinct subject matter.

Oath/Declaration

The application is objected to because of alterations to the original specification which have not been initialed and/or dated as is required by 37 CFR 1.52(c). A properly executed oath or declaration which complies with 37 CFR 1.67(a) and identifies the application by application number and filing date is required.

35 U.S.C. 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Independent claims 1 and 12 are indefinite for omitting an essential step. Claims 1 and 12 are drawn to a method for determining the presence of HIV in a body fluid comprising contacting the body fluid with an antigenic polypeptide. However, the claim does not require the step of taking a sample of the body fluid. This step is required in order to contact the body fluid with an antigenic polypeptide under conditions that support a detectable reaction. Thus, independent claims 1, 12 and 26 are indefinite for omitting an essential step.

Claim 6 is indefinite for providing that the polypeptide "retains substantially all of the immunological reactivity of the unmodified polypeptide." This language is unclear in that "substantially all" comprises relative terminology that does not adequately define the sclope of the immunological reactivity. The specification fails to overcome this deficiency because it fails to provide a frame of reference for the phrase "substantially all." Based on the reasoning set forth here, and in the Response to Arguments below, claim 6 is rejected for being indefinite.

35 U.S.C. 112, first paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 6 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the recited additions and substitutions, does not reasonably provide

enablement for the deletions that enable the modified protein to retain its immunological activity. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims without investing undue experimentation.

Undue experimentation is defined by the following factors: the breadth of the claims; the nature of the invention; the state of the prior art; the level of one of ordinary skill; the level of predictability in the art; the amount of direction provided by the inventor; the existence of working examples; and the quantity of experimentation needed to make or use the invention based on the content of the disclosure. *In re Wands*, 858 F.2d at 737, 8 USPQ2d at 1404.

The breadth of claim 6 provides for a method of detecting HIV antibodies based on the use of the polypeptide of SEQ ID NO:3, wherein the polypeptide is modified by any conservative deletion. Although polypeptides for detecting HIV antibodies are widely known, the conservative changes that can be made to these polypeptides are less clear. This results because making conservative mutations requires a detailed understanding of each polypeptide's antigenic determinants and the contribution of the individual amino acids that make up those determinants. For example, research has shown that the specific recognition of some SIV antibody may be completely destroyed by site-specific deletions (see e.g. J. Virol. (September 1994) 68, 9, 5395-5402). Thus, deriving conservative, site-specific deletions for HIV antibodies is an unpredictable art. Based on this unpredictability, one skilled in the art would have to rely heavily on Applicants' specification in order to derive the claimed conservative deletions. However, the content of the specification only details the amino acid substitutions and additions that allow the claimed antibodies to retain their specific recognition. A disclosure of the specific

regions that provide SEQ ID NO:3 with the ability to recognize antigen is also lacking. Thus, the content of the specification fails to provide adequate direction for deriving the conservative mutations claimed. Based on this lack of disclosure, one skilled in the art would have to invest undue experimentation in order to make and use the method Applicants claim.

Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 6 lacks written description for the conservative deletions that allow the polypeptide (i.e. SEQ ID NO:3) to retain substantially all of its original immunological reactivity. The specification generally provides that the inventive polypeptide may be modified by up to 20%, and still retain its antigenic mimicry (pp. 4-5). The specification also details a number of conservative substitutions that may be made without impacting the polypeptide's antigenicity (p. 5). However, the specification lacks a teaching of the deletions that may be made to the polypeptide without affecting its ability to recognize antigen. Moreover, the specification fails to point to those regions of SEQ ID NO:3 that are involved in the specific antigen/antibody interaction. Because conservative antibody deletions are difficult to predict (see above), the specification fails to convey to one skilled in the art that the inventors were in possession of the conservative polypeptide deletions recited in claim 6.

Claim Rejections - 35 USC § 103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zaitsev et al. (RU 2043411 C1) in view of Montagnier et al. (US 5,221,610).

Claims 1-11 are interpreted as being drawn to method for detecting, in a body fluid, antibodies against HIV-1 and HIV-2 polymerase proteins comprising contacting the body fluid with (i) a polypeptide consisting essentially of the amino acid sequence defined by SEQ ID NO:3, and (ii) a HIV-2 polypermase polypeptide, and detecting the presence of HIV antibody in the body fluid. The claims provide that the method may be carried out using fluorescent labels, radiolabels, or in an ELISA format. The method further provides that the polypeptide consisting essentially of SEQ ID NO:3 may be attached to a carrier.

Zaitsev et al., on the other hand, disclose a composition for detecting antibodies to HIV-1 and HIV-2, wherein the composition comprises a polypeptide consisting essentially of the amino

acid sequence of SEQ ID NO:3. Zaitsev does not expressly teach using the composition in the various immunoassay formats detailed in the claims. However, Montagnier et al. overcome this deficiency by teaching the conjugation of HIV polypeptides to a variety of labels, including radioisotopes, fluorescent compounds, and enzymes (col. 16, lines 9-10 and 21). Montagnier et al. also teach conjugating HIV polypeptides to a carrier (col. 16, line 16), as well as a solid phase (col. 16, line 27). One skilled in the art would have been motivated to apply Zaitsev et al.'s polypeptides to the immunoassays taught by Montagnier et al.. This results because using the different immunoassay formats taught by Montagier et al. is simply a matter of choice to one skilled in the art. Moreover, one skilled in the art would have a reasonable expectation of success in applying the Zaitsev et al./Montagnier et al. combination given that both references relate to detecting HIV antibodies. Therefore, at the time of Applicants' invention, it would have been obvious to apply Zaitsev et al.'s polypeptide to the immunoassays taught by Montagnier et al..

Claims 1-4 and 6-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suckhanova et al. (RU 2085586 C1) in view of Montagnier et al. (US 5,221,610).

With the exception of requiring the detection of HIV-2 polymerase proteins, claims 1-4 and 6-12 are interpreted as noted above. Sukhanova discloses a polypeptide consisting essentially of SEQ ID NO:3. Sukhanova does not expressly disclose using the polypeptide of SEQ ID NO:3 in the various immunoassay recited in the claims. However, Montagnier et al. overcome this deficiency by teaching the immunoassays noted above. At the time of Applicants' invention, it would have been obvious to one skilled in the art to apply Sukhanova et al.'s

polypeptide to the immunoassays disclosed in Montagnier et al. given that selecting any one of these immunoassays is simply a matter of choice to one skilled in the art. Furthermore, Sukhanova et al. expressly state that their polypeptide may be used in the diagnosis of HIV. Note that one skilled in the art would have a reasonable expectation of success in applying the stated combination in that both Sukhanova et al. and Montagnier et al. relate to detecting HIV antibodies.

Response to Arguments

Applicants note that the Examiner agreed to withdraw the requirement for a new declaration. This is in error since this requirement was maintained in the Final Rejection mailed May 19, 2004. It should also be noted that the requirement for a new oath or declaration was not waived in the Advisory Action mailed December 29, 2004. The requirement for a new oath or declaration is being maintained because the original declaration failed to note handwritten corrections that were made to the originally filed specification.

Art Rejections Under Kang

Applicants remarks with respect to Kang (U.S. Pat. No. 5,858,646) are moot in view of the new grounds of rejection presented above.

Withdrawn Claims 13 and 14

In the After Final Amendment, Applicants urge that claims 13 and 14 should be rejoined in light of the amendment to claims 1 and 12. The Examiner respectfully disagrees in that claims 13 and 14 are drawn to patentably distinct methods and compositions as noted above.

Indefiniteness Rejection of Claim 6

Applicants argue that rejecting claim 6 for reciting "substantially all" is improper because the specification provides a standard for determining what "substantially all" refers to. Applicants point to the specification's teachings that relate to the claimed polypeptide's ability to "immunologically mimic" an epitope of the HIV pol region. The Examiner respectfully submits that these teachings do not overcome the lack of clarity presented by the phrase "substantially all." This results because "immunologically mimics" merely indicates that a substance simulates the immunological properties of another ligand. Thus, if a substance retains "substantially," but not "all" of the antigenic properties of a ligand, the substance does not "mimic" the ligand. It is also worth noting that the specification fails to provide any endpoints (i.e. data) that would allow one skilled in the art to define a range of activity that "substantially all" refers to. For example, there is no teaching of the binding affinities of the polypeptides that resemble "substantially all" of the immunological reactivity of the unmodified polypeptide. The rejection of claim 6 as indefinite is therefore maintained.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy M. Brown whose telephone number is (571) 272-0773. The examiner can normally be reached on Monday - Friday, 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Housel can be reached on (571) 272-0902. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Timothy M. Brown
Examiner
Art Unit 1648

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6/7/05

JEFFREY S. PARKIN, PH.D.
PRIMARY EXAMINER